

Dr. Rogers moved the following Resolution :

*Resolved*, That in view of the originality, merit and success of Mr. Wootten's process for utilizing coal waste, Mr. Wootten be awarded the premium above referred to.

After discussion on which resolution it was

*Resolved*, That the Report be recommitted to the Committee, with instructions that all competing methods be considered by the Committee which shall be presented to its consideration within three months after public advertisement by the Society in two city papers once a week for three weeks ; the function of the Committee being clearly understood to be to report on the success, the originality, and the merits\* of the process.

And the Society was adjourned at 11 o'clock. P. M.

*Stated Meeting, July 20th, 1877.*

Present, 16 members.

Vice-President, Mr. FRALEY, in the Chair.

Prof. H. Draper, a newly-elected member, was introduced to the presiding officer and took his seat.

Visitor, Mr. Wallace, of Ansonia, Conn.

A photograph of Mr. Sears C. Walker was received from the Smithsonian Institution, for the album.

Letters of acknowledgment were received from the R. S. of Tasmania, Dec. 27, 1876 (92, 93, 94); R. D. A. Copenhagen, June 16, 1877 (96, 98); N. H. Union at Bremen, July 1, 1877 (96,\* 98) (\* asks for 97 not received); A. d. L. Rome (97); Trübner & Co, London, June 29, 1877 (96,\* 98); N. Hampshire Hist. Soc. July 2, 1877 (99); and the Chicago Hist. Soc. June 14 and 29, 1877 (94, 95, 96, 97, 98).

Letters from the R. Acad. Berlin, June 15, July 2, were received, requesting missing pages Proc., Vol. VII, pp. 121-163, and Vol. IX, 1870, plates 6, 7, 8.

A letter from the Bureau of Education, Washington, D. C., was received, requesting replies to inquiries respecting meetings and publications.

\* Mr. Briggs wished the attention of the Society to be drawn to a clerical error in the printed Proceedings of December 1, 1876, whereby the word "merits" was omitted.

Letters of envoy were received from the R. Norw. University; K. K. Z. B. G. Vienna; N. G. Bamberg; and the U. S. Depart. Interior, Washington.

Donations for the Library were received from the R. S. Tasmania; Phys. C. Obs. St. Petersburg; R. Nor. Univ. Christiania; K. K. Geol. R. Vienna: Anthro. G. and K. K. Z. B. G. Vienna; D. Geol. G. Berlin; K. L. C. A. D. N. Dresden (with a letter requesting a renewal of the old correspondence\*); Ed. Haus und Landwirthschaft Kalendar, Munich; V. f. K. u. A. Ulm; N. H. G. Bamberg; A. d. L. Rome; Portuguese Commissioners to the Centennial Exhibition; S. de Geog., Ed. Annales des Mines, and *Révue Politique*, Paris; R. A. Brussels; Astronomical Society, Royal S. of Antiquaries, Zoological Society, and *Nature*, London; R. Cornwall Pol. Society; N. H. S. Newcastle-upon-Tyne; Director of Geol. Survey, Canada; Ed. Canadian Journal of Science; Essex Institute; A. Acad. A. and S.; Boston N. H. S.; Mass. State Board of Health; S. H. Scudder, Cambridge; Ed. *Science Observer*, Boston; Am. Jour. Science and Arts; Yale College; Geol. Survey New York, Prof. Hall, Albany; Young Men's Association, Buffalo; Acad. N. S. Philadelphia; Franklin Institute; Jour. of Pharmacy; Jour. of Med. Sciences; *Med. News and Library*; Penn Monthly; E. D. Cope, Philadelphia; Peabody Institute, Baltimore; Dep. Int. Washington; Chicago Acad. Sciences; Ed. *Botanical Gazette*, Ind.; M. Barcena, Mexico.

\* On motion of Dr. LeConte, it was resolved that the Kais. Leopold. Carol. Academie at Dresden be restored to its place on the list of correspondents, and that it be supplied with all missing volumes of Transactions and numbers of Proceedings as far as possible. (See Mar. 3, 1876.)

Dr. Draper read and explained a paper, entitled "Discovery of Oxygen in the Sun by Photography, and a new theory of the Solar Spectrum, by Prof. Henry Draper, M.D."

Prof. Barker expressed his pleasure at hearing this paper, which in his opinion was the most important contribution

to Solar Physics made in America in this century. Granting the fact of the existence of *bright* lines in the solar spectrum, and no one after seeing Prof. Draper's photographs on collodion could doubt the fact, all the new views expressed in this paper follow as a matter of course. The bright lines are not only clearly apparent when looked for, but are numerous.

Mr. Chase joined in the tribute of merited admiration for Dr. Draper's brilliant discoveries, and suggested that a possible explanation for the different action of different elements might be found in differences of density and elasticity.

W. M. Hicks (L. E. and D. P. Mag, June 1877), by special assumptions, and by a mistake in calculation (see his note in P. Mag, July 1877), obtains the ratio  $\frac{c'}{c} = 1.423$ . He says: "If, then, the two atoms of a molecule have separated, there seem only two ways of accounting for it. Either their relative motion becomes so large as to overcome the force of attraction, or some external force must act upon them, which can be nothing less than a reaction between them and some other molecule. The latter is the hypothesis I have adopted in the following investigation." My own ratio, based on relative motions (Proc. Am. Phil. Soc., xiv., 651), is  $\frac{c'}{c} = 2\pi^2 : (\pi^2 + 4) = 1.423$ . This coincidence is, of course, purely accidental, but it is none the less curious. The reasoning upon which it was based seems to justify both my own views of the kinetic energies in perfect gases, and Hicks's view of the importance of temperature relations in coercible gases.

In a mass, like the Sun, which is presumably at or near the point of dissociation, gaseous permanence and gaseous density would both contribute to a change of elliptic into linear radial oscillations, which would have acquired their mean velocity at points ranging between about 180,000 miles, and 260,000 miles above the Sun's surface. It is, therefore, quite possible, especially if hydrogen is metallic, that oxygen, carbon, and other non-metals, may have greater centrifugal tendencies than hydrogen and metallic vapors. Perhaps spectroscopic observations near the Sun's poles may present some contrasts with equatorial observations, which will help towards a settlement of the question.

Prof. Barker communicated a "Note on the exactitude of the French normal fork; a reply to the paper of Mr. A. J. Ellis; by Rudolph König, Ph.D.," of Paris; and said that the matter was one of great importance; for if Mr. Ellis' attack could be sustained no confidence could be placed in

and therefore no use could be made by physicists of the large and valuable instruments in the physical laboratory of the University of Pennsylvania made by Dr. König, of Paris. He was happy, therefore, to be able to place on record so complete a refutation of the unwarranted assertions of Mr. Ellis by the aid of Prof. Helmholtz and Prof. Meyer of Hoboken.

Prof. Lesley communicated a paper, entitled "Note on the probable derivation of *Mazarpeos* from the Egyptian formula *Mazeru* after proper names," and explained his views of the appearance of such sacerdotal terms in early times on the monuments of Egypt and in later times in the literature of Greece and Rome. He suggested the possible etymology of *αἰθερος*, *αἰθεροδαμων* (= *εὐδαιμων*) from the Egyptian *alp. arp*, vine, wine, in the sense of *jucundus*, joyous; while *mazaru* corresponded to the Hebrew *barak*, *beatus*, blessed. In like manner the *tal* of the monuments reappears in the Latin *tutus*, safe, secure, permanent, unshakeable. and possibly in *totus*, the cosmös, or established order, &c.

Prof. Chase suggested a mode of reaching the demonstration of bright lines in the solar spectrum by mathematical relations between four elementary formulæ of the solar system based on the nebular hypothesis.

Prof. Cope communicated two papers, entitled, "On a new species of Adocidæ from the Tertiary of Georgia;" and "Tenth Contribution to the Herpetology of Tropical America; by E. D. Cope."

Upon a report from Mr. E. K. Price, Chairman of the Committee on the Michaux Legacy, it was

*Resolved*, That three copies of the Journal of Forestry be subscribed for, out of the Michaux Legacy; one for the Society; one for the Professor of Botany, Lecturer in the Park; and one for the use of the Committee on the Michaux Legacy.

On motion of Prof. Barker, a vote of thanks was passed to Prof. Draper for the gift of the excellent illustrations accompanying his paper.

Pending nominations Nos. 836, 837, 838, were read and

ballotted for, and on a scrutiny of the ballot boxes, the following persons were declared duly elected members of the Society :

Mr. H. C. Humphreys, Chemist, of Philadelphia.

Prof. I. J. Sylvester, of Johns Hopkins Univ., Baltimore.

Mr. John Ericsson, of New York.

And the meeting was adjourned.

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*Stated Meeting, August 17th, 1877.*

Present, 8 members.

Secretary, Dr. LeCONTE, in the Chair.

Letters acknowledging the receipt of Proceedings, 94 to 99, were received from the R. Observatory at Greenwich; the Radcliffe Observatory; Philosophical Society of Liverpool; the East Tennessee University; Poughkeepsie N. H. Society; Wisconsin Hist. Society; Library of Congress; Public Library of New Bedford; Library of Yale College; Northern Academy of Hanover, Ind.; U. S. Coast Survey Office; American Journal at New Haven; Linnean Society at Lancaster; Buffalo N. H. Society; Prof. L. Rüttimeyer, John L. Campbell, C. F. Brackett, C. E. Dutton, W. A. Hammond, E. Goodfellow, T. L. Kane, Thomas Hill, P. F. Rothermel, R. S. Williamson, Jos. LeConte, John LeConte, Cleveland Abbe, J. F. Clarke, Joseph Henry, M. F. Longstreth, Jas. D. Dana, and C. A. Young, now of Princeton.

Donations for the Library were received from the R. Academies at Berlin and Brussels; the Antiquarian Society at Copenhagen; M. Chabas; M. L. Hugo; the Geographical Society and *Révue Politique*, Paris; the Observatories at Madrid, Mexico, Buenos Ayres and Cordoba; the R. Astronomical and Zoological Societies and *London Nature*; the Philosophical Society at Glasgow; the *Canadian Naturalist*; Government of Canada; Peabody Museum at Cambridge; Appalachian Club; American Antiquarian Society; Whelpley and Storer; Silliman's *Journal*; Mercantile Library of